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(54) A table convertible into a trolley

(57) A table usable as an ironing board comprises a board (1) and a foldable framework, the framework being formed of two pivotally connected leg members (2, 3) which may be arranged in an erect position to support the board (1). The leg members (2, 3) may alternately be collapsed into a substantially flat position and a support (22) pivotally connected to one of said leg members (2) swung outwardly to extend substantially at right angles to said collapsed leg members. The support (22), on which luggage (30) can be carried, is pivotally mounted on an axle (6) on which two wheels (7) are journalled. In this position the apparatus forms a luggage trolley.

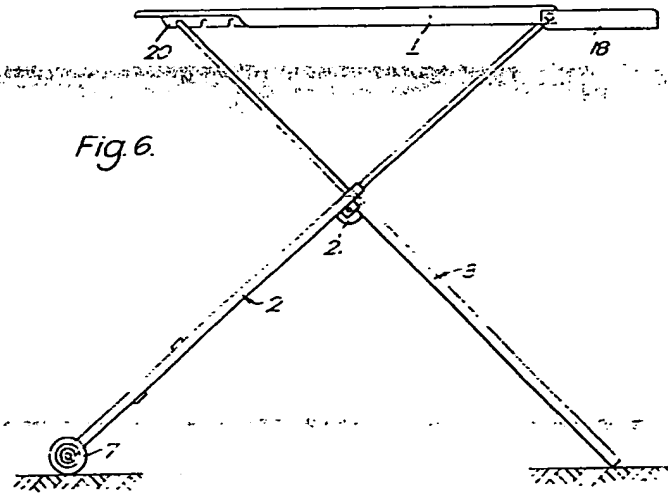

Fig. 6.

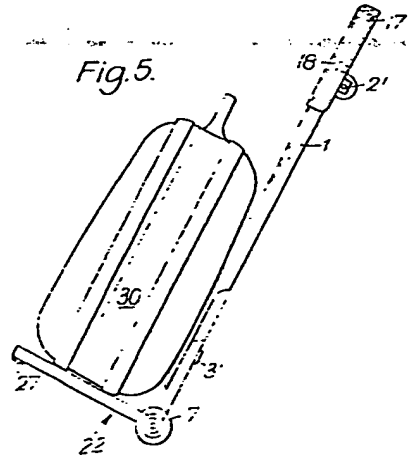

Fig. 5.

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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

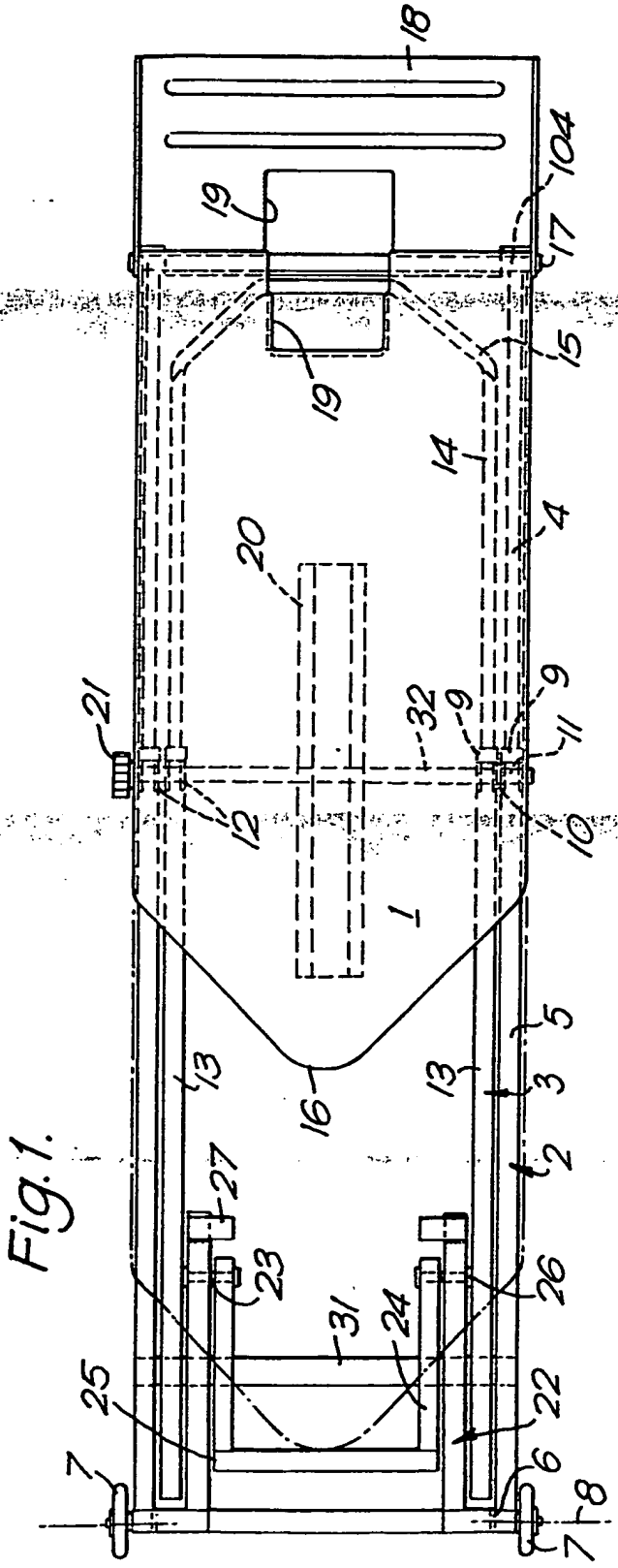
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Fig. 1.

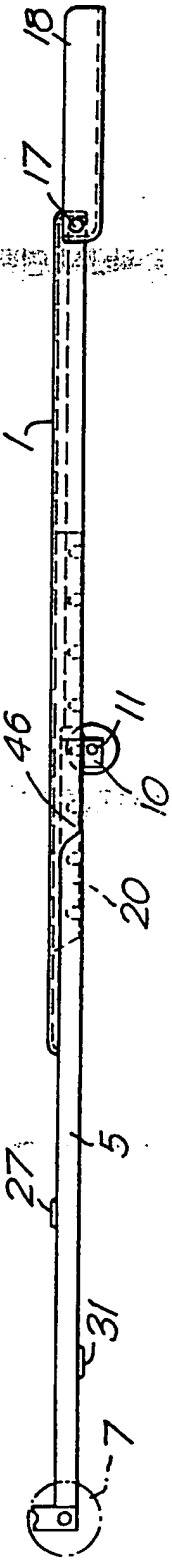
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Fig. 2.

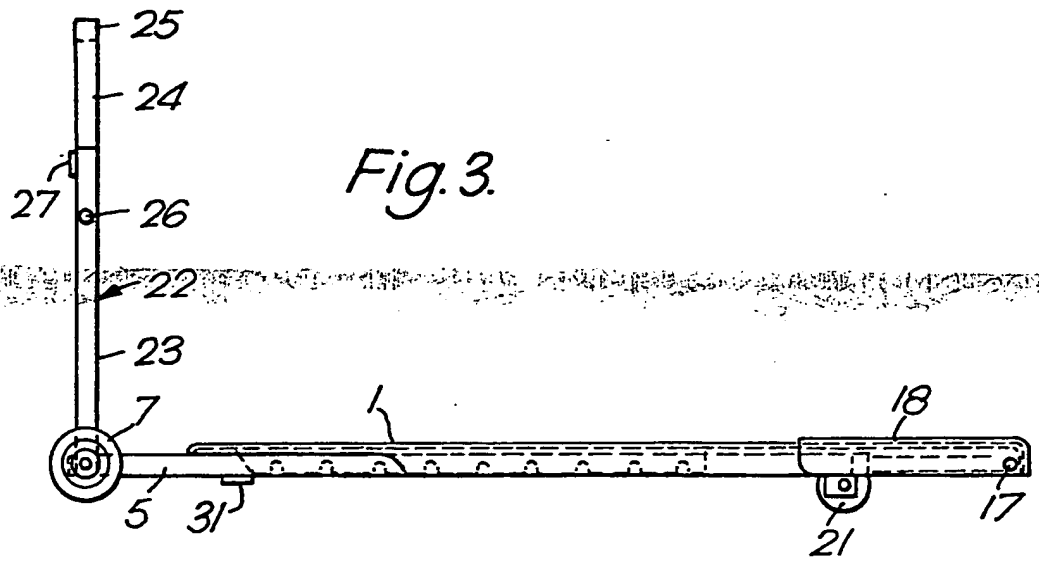


Fig.3.

Fig.4.

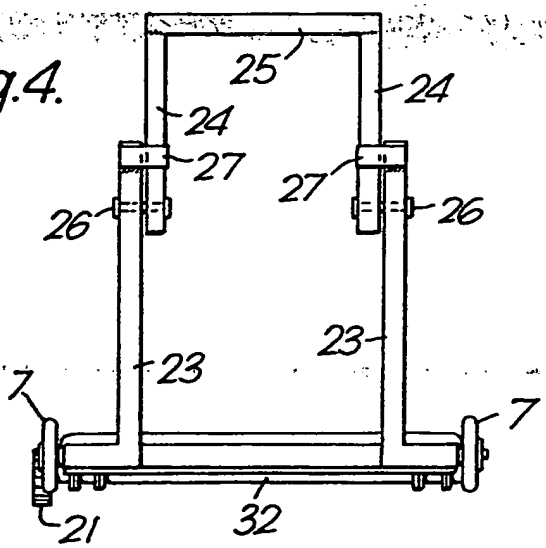


Fig.5.

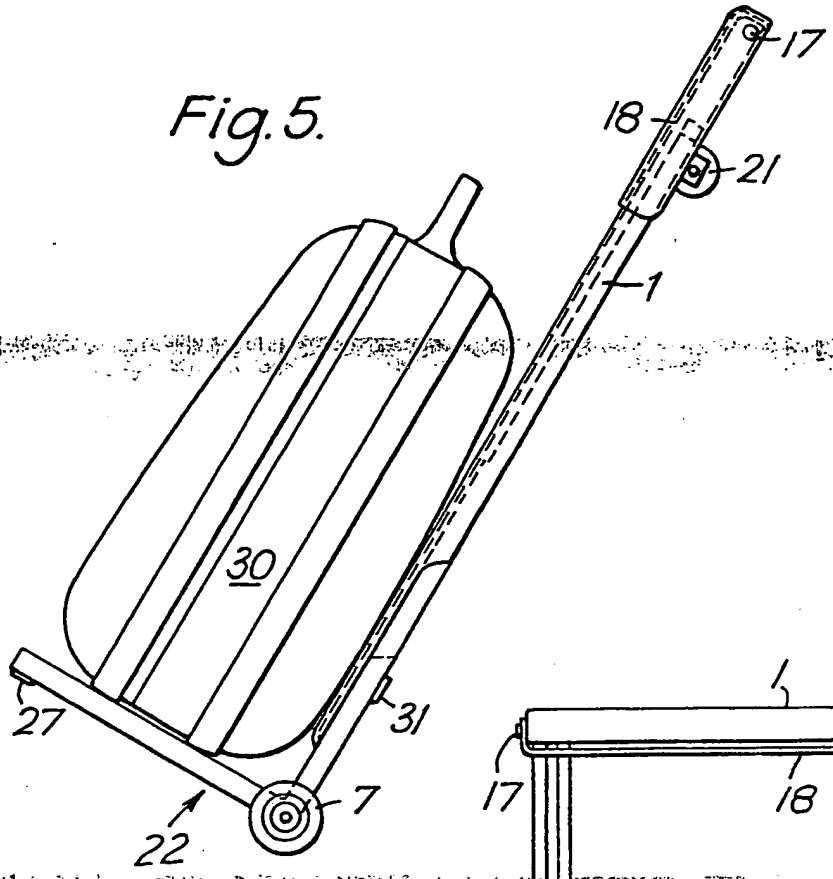
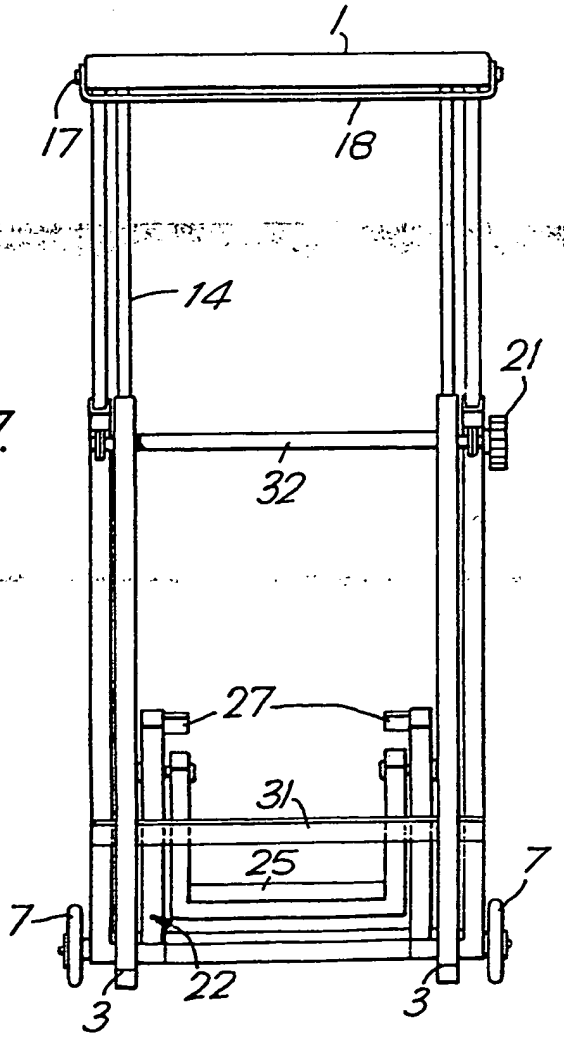


Fig.7.



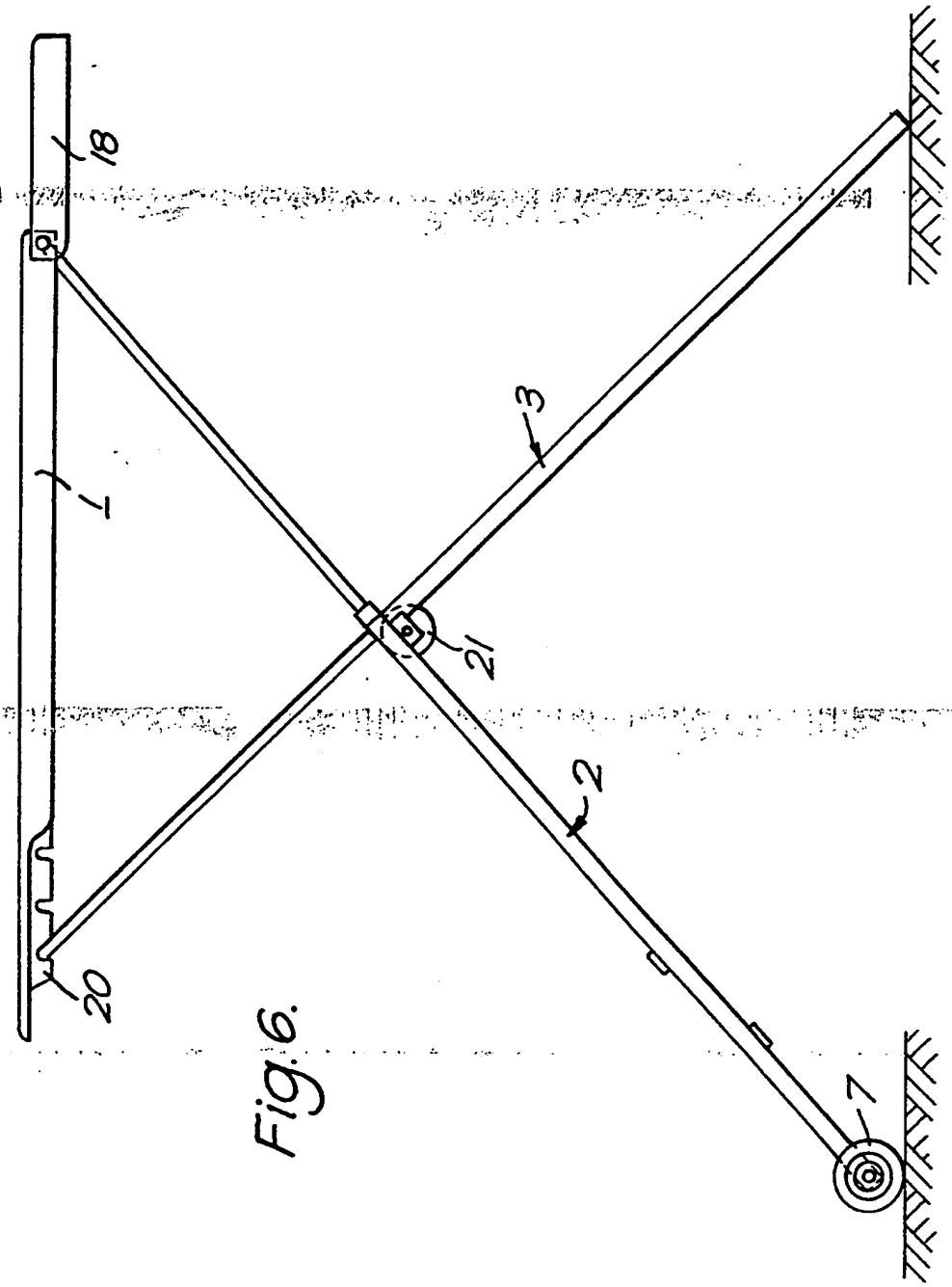


Fig.6.

A COLLAPSIBLE APPARATUS SELECTIVELY FORMING A TABLE AND A TROLLEY

The present invention relates to a collapsible apparatus for selectively forming a table and a trolley.

Travellers often use luggage trolleys to assist in moving their baggage. However, once they arrive at their destination the trolley is of no further use until they continue their journey.

According to the present invention there is provided a collapsible apparatus comprising a board, and a framework for supporting said board, said framework being foldable between an erected position in which it is arranged to support said board to extend substantially horizontally to thereby form a table, and a collapsed position, and further comprising wheels or rollers rotatably mounted on said framework, and means for holding articles on said collapsed framework, the wheels or rollers being arranged such that in its collapsed position the framework forms a trolley.

Apparatus of, an embodiment of the invention is used initially as a trolley. When use as a trolley is no longer required, the apparatus can be erected to form a table. In one particularly useful embodiment,

this table is specifically designed for use as an ironing board. This is useful for travellers because it is rare for hotels and even apartments to provide ironing boards.

In one embodiment the board and the framework are not connected. The board is simply laid against the framework in its collapsed position, and is held thereon, together with any articles to be carried, by said means for holding the articles. However, in a preferred embodiment the board is pivotally connected to said framework and in the collapsed position the framework and the board together are arranged to be at least approximately flat.

The means for holding the articles on the framework may comprise ties, elastic belts and the like. Additionally or alternatively, the said holding means may comprise support means arranged to extend substantially at right angles to the framework in its collapsed position.

In a preferred embodiment, the framework comprises an axle member to each end of which one of a pair of wheels is journalled. Said support means is mounted on said axle member, and is preferably pivotally mounted thereon for pivotal movement between a folded and an extended position. Said support means may comprise a plate or a frame member.

In an embodiment, said frame member is comprised of two or more mutually connected frames whereby the length of the frame member in its extended position is adjustable. The frames of the frame member could be, for example, pivotally connected or telescopically arranged.

In a preferred embodiment, said framework for supporting the board comprises two pivotally connected leg members, one end of a first of said leg members being pivotally connected to said board. Preferably, the axle member carrying the wheels is fixed to the other end of said first leg member. Co-operable means may be provided on one end of the second leg member and on the underside of said board for releasably engaging the board and said second leg member. In an embodiment, a strut is provided at said one end of said second leg member and is engageable in a selected one of a number of slots carried by said board.

In an embodiment, a support tray is pivotally mounted to said framework.

Locking means may be provided to releasably secure the pivotable connection between the two leg members of said framework. Additionally and/or

alternatively, each of the leg members may be adjustable in length. For example, in a preferred embodiment each of said leg members comprises at least two telescopically arranged tubes. This enables the luggage trolley to be collapsed even further from its collapsed position, for example for stowage underneath an aircraft seat.

Embodiments of the present invention will hereinafter be defined, by way of example, with reference to the accompanying drawings, in which:

Figure 1 shows a plan view from above of a collapsible apparatus of the invention in a first collapsed position,

Figure 2 shows a partial side elevation of the apparatus in its collapsed position of Figure 1,

Figure 3 shows a side elevation of the apparatus in a fully collapsed position and with a support extended such that a luggage trolley is formed,

Figure 4 shows a plan view from underneath of the extended support of the trolley of Figure 3,

Figure 5 shows schematically the trolley of Figure 3 when used for transporting luggage,

Figure 6 shows the apparatus of Figure 1 erected to form an ironing board, and

Figure 7 shows a plan view similar to that of Figure 1, but with the apparatus in its fully collapsed position.

The collapsible apparatus shown in Figure 1 has a framework for supporting a generally planar board 1. This framework comprises two leg members 2, 3 which are pivotally connected together. The outer leg member 2 is a substantially rectangular frame which is arranged to be telescopic such that its longitudinal extent is adjustable. Each side of the frame of the outer leg member 2 comprises a first hollow, elongate rail 5 in which an elongate tube 4 is slidably received. The outer ends of the two tubes 4 are connected by way of a further tube 104. Similarly, the outer ends of the two rails 5 are connected by a tube 6 which forms an axle member for a pair of wheels 7. In this respect, a common axle (not illustrated) for the two wheels 7 is mounted to extend through the tube 6 and the wheel members 7 are journalled thereon for rotation about an axis 8.

Preferably, the two rails 5 each have a substantially rectangular outer cross-section with a circular cross-section bore (not shown) extending therethrough into which a respective tube 4 is received. Preferably, each tube 4 has a circular cross-section. A short sleeve 9 is slidably mounted on each tube 4 and is arranged to act as a stop to limit the insertion of the tube 4 into a respective rail 5. In this respect, a grub screw or similar tightening means (not shown) extends through each sleeve 9 for releasable engagement with the respective

tube 4 whereby the sleeve 9 can be maintained in a selected position relative to the tube 4.

At its open end, the outer rectangular cross-section of each rail 5 is split to define two substantially parallel, spaced, depending tabs 10 (Figure 2). The two tabs 10 are arranged such that they can be squeezed towards one another to cause some restriction of the circular bore within the respective rail 5 and thereby to prevent sliding movement of the tube 4 relative to the rail 5.

The two depending tabs 10 of each rail 5 are each apertured, and their apertures are aligned whereby a hinge pin, as indicated at 11, may be passed therethrough. This hinge pin 11 is similarly passed through aligned apertures in a respective pair of depending tabs, indicated at 12, formed at the open end of each of two substantially parallel, spaced, elongate hollow rails 13 of the inner leg member 3. Again, each of these rails 13 is of a substantially rectangular outer cross-section with a circular cross-section bore extending therethrough which is arranged to slidably receive a corresponding elongate circular cross-section tube 14 therein. As with the outer rails 5, squeezing the depending tabs 12 of each pair towards one another will prevent sliding movement of the tube 14 within the corresponding rail 13. The free ends of the tubes 14 are connected together by a tubular strut 15, whilst the outer ends of the rails

13 are left free.

The board 1 has a substantially planar top surface and in the embodiment illustrated has a shaped front end 16. Along its side edges, the board 1 is shaped to form depending side walls 46 as indicated in Figure 2. At the rear end of the board 1, these side walls 46 are apertured to enable a pivot pin 17 to pass therethrough. This pivot pin also extends through the further tube 104 of the outer leg member 2 whereby the board 1 is pivotally connected to this outer leg member 2.

In the embodiment illustrated, a substantially planar support tray 18 is also similarly mounted on the pivot pin 17. Preferably, a tightening nut (not shown) is engageable on the pin 17 so that the position taken up by at least the support tray 18 can be fixed. In Figures 1 and 2 the support tray 18 is shown in its extended, use position. When it is not in use it can be pivoted about the pin 17, after loosening any nut or other tightening means, into a position overlying the board 1, as shown in Figure 3. In the embodiment illustrated, the upper surface of the support tray 18, when in its extended position of Figure 1, is preferably covered with a heat resisting material. Both the board 1 and the support tray 18 are provided with cut-outs 19 which are arranged to substantially correspond when the tray 18 is pivoted to overlie the board 1. In this position, the

overlying cut-outs 19 form a handle with the rails 104 and 15.

The collapsed apparatus illustrated in Figure 1 can be erected to form an ironing board. To do this, the outer leg member 2 is pivoted relative to the board 1 after loosening any tightening means provided on the pivot pin 17. In addition, the inner leg member 3 is pivoted relative to the outer leg such that its end tube 15 is moved towards the front end 16 of the board whilst the free ends of the rails 13 are brought into a position substantially beneath the further tube 104. The free ends of the rails 13 and the wheels 7 supported on the axle member 6 on the rails 5 are to act as supports for the ironing board. Underneath the board 1 there is provided a slotted rack 20, which can be seen in Figure 2, and the tube 15 of the inner leg member 3 is engaged in a selected one of the slots of this rack 20 to support the board 1 in a substantially horizontal position. In this position, which is illustrated in Figure 6, the two leg members 2, 3 form cross members supporting the board 1.

In the embodiment illustrated the two leg members 2, 3 can be locked in position by way of a locking nut 21 engaged on the hinge pin 11 extending through the tabs 10, 12 of the rails 5 and 13. It will be appreciated that in this erected position the stops 9 carried by each of the tubes 4 and 14 will have

determined the length of each of the leg members 2, 3, but that the locking nut 21 can be tightened on the hinge pin 11 to squeeze the pairs of tabs 10, 12 together whereby it is ensured that no movement of the tubes 4 and 14 relative to their respective rails 5 and 13 is possible. This is particularly important when in its erected position the apparatus is used to form an ironing board.

A support, generally referenced 22, is pivotally mounted on the axle member 6 which supports the wheels 7. This support 22 is used to carry luggage when the apparatus is converted to form a luggage trolley. Generally, when the apparatus is erected to form an ironing board, the support 22 is arranged to extend substantially co-planar with the outer leg member 2 as illustrated in Figure 1. It is retained in this position by a nut or other tightening means (not shown) screwed onto the axle member 8. This tightening means will also prevent rotation of the wheels 7 when they are supporting the ironing board.

It will be seen that the support 22 comprises two substantially parallel, spaced outer rails 23 which are each mounted for pivoting movement relative to the axis 8. Two generally parallel spaced inner rails 24 extend within the rails 23. At one end, these inner rails 24 are connected together by way of a transverse rail 25. Near their opposite ends, each of the

inner rails 24 is pivotably connected to a respective outer rail 23 by way of a respective pivot pin 26. At its free end each outer rail 23 is provided with a laterally extending projection 27 forming a stop to limit the pivoting movement of the inner rail 24 relative thereto.

When the apparatus is to be used as a luggage trolley it is first of all collapsed from the erected position of Figure 6 to the position illustrated in Figure 1. This may be achieved by substantially reversing the process described above for the erection of the ironing board. The inner and outer leg members 2, 3 are then secured relative to each other in the collapsed position by tightening the nut 21. The outer rails 23 of the support 22 are pivoted about the axle member 6 to extend substantially transversely relative to the framework of the leg members 2 and 3 and then, if required, the inner rails 24 can be pivoted about the pins 26 to extend substantially in alignment with the outer rails 23. The support 22 will then take up the configuration illustrated in Figure 3. It will be appreciated that over rotation of the inner rails 24 out of alignment with the outer rails 23 is prevented by the stops 27. An underneath plan view of the extended position of the support 22 is shown in Figure 4. It will be appreciated that in this position the apparatus forms a luggage trolley, the support 22 being used as holding means for luggage

to be supported on the trolley, and movement of the trolley being by way of the wheels 8. The rails 104 and 15 together with the cut-outs 19 provide a handle to enable the trolley to be manoeuvred.

If the luggage to be carried by the trolley is not particularly bulky the longitudinal extent of the apparatus as shown in Figure 1 can be reduced. In this case, this is done by unscrewing the locking means 21 so that the tabs 10 and 12 do not prevent relative movement of the tubes 4 and 14 within the respective rails 5 and 13. The sleeves 9 acting as stops also need to be released such that sliding movement of the tubes 4 and 14 through these sleeves is possible. In this position, the tubes 4 and 14 can be pushed into the respective rails 5 and 13. The fully telescoped position of the tubes 4 and 14 is indicated on Figure 1 in which the end position of the front end 16 of the board 1 in the most compact condition is shown in dotted lines. When in its fully telescoped position, the trolley is retained in position by tightening the locking nut 21. This position of the trolley is illustrated in Figure 3.

Figure 5 shows schematically the luggage trolley in use with the leg members 2 and 3 telescoped to their shortest extent and with a bag 30 supported on

the support 22 which has its inner rails 24 folded within the outer rails 23.

Preferably, and as illustrated in Figure 1, the outer rails 5 of the outer leg member 3 are also connected by a bar 31 extending substantially parallel to the axle member 6. In the collapsed position of Figure 1, this bar 31 prevents the support 22 from moving out of its position substantially co-planar with the outer leg member 2. It similarly prevents pivoting movement of the inner leg member 3. Additionally, the bar 31 acts as a support for the board 1 in the collapsed position. Naturally, the bar 31 must be towards the axle member 6 so that it does not unduly interfere with the erection of the ironing board. Of course, it can be moved away from the ends of the rails 13 to allow pivoting of the inner leg member by extension of the outer leg member 2. Preferably, and as illustrated, the hinge pin 11 for the two leg members 2, 3 is guided for strength within a tube 32.

For completeness, Figure 7 shows a fully collapsed view of the apparatus of the invention which is preferably sized to be acceptable as hand luggage on an aircraft. Preferably, the apparatus is made of light hollow materials, such as light metal or

plastics material for ease of transport.

Whilst the invention has been described above with reference to a particular implementation as illustrated it will be appreciated that modifications and variations to the invention can be made within the scope of the appended claims.

CLAIMS

1. A collapsible apparatus comprising a board, and a framework for supporting said board, said framework being foldable between an erected position in which it is arranged to support said board to extend substantially horizontally to thereby form a table, and a collapsed position, and further comprising wheels or rollers rotatably mounted on said framework, and means for holding articles on said collapsed framework, the wheels or rollers being arranged such that in its collapsed position the framework forms a trolley.

2. Apparatus as claimed in Claim 1, wherein the board is pivotally connected to said framework and in the collapsed position the framework and the board together are arranged to be at least approximately flat.

3. Apparatus as claimed in Claim 1 or 2, wherein said holding means comprises support means arranged to extend substantially at right angles to the framework in its collapsed position.

4. Apparatus as claimed in Claim 3, wherein the

framework comprises an axle member and said support means is pivotally mounted on said axle member for pivotal movement between a folded and an extended position.

5. Apparatus as claimed in Claim 4, wherein a respective wheel is journalled on each end of said axle member.

6. Apparatus as claimed in any of Claims 3 to 5, wherein said support means is a frame member.

7. Apparatus as claimed in Claim 6, wherein said frame member is comprised of two or more mutually connected frames whereby the length of the support means is adjustable.

8. Apparatus as claimed in Claim 7, wherein the frames of the frame member are pivotally connected or telescopically arranged.

9. Apparatus as claimed in any preceding claim, said framework for supporting the board comprises two pivotally connected leg members, one end of a first one of said leg members being pivotally connected to said board, and co-operable means are provided on one

end of the second leg member and on the board for releasably engaging the board relative to said second leg member.

10. Apparatus as claimed in Claim 9, wherein a strut is carried at said one end of said second leg member and is engageable in a selected one of a number of slots carried by said board.

11. Apparatus as claimed in Claim 9 or 10, wherein an axle member carrying wheels is fixed to the other end of said first leg member.

12. Apparatus as claimed in any of Claims 9 to 11, wherein locking means are provided to releasably secure the pivotable connection between the two leg members of said framework.

13. Apparatus as claimed in any of Claims 9 to 12, wherein each of the leg members is adjustable in length.

14. Apparatus as claimed in Claim 13, wherein each of said leg members comprises at least two telescopically arranged tubes.

15. Apparatus as claimed in any preceding claim, wherein a support tray is pivotally mounted on said framework.

16. A collapsible apparatus substantially as hereinbefore described with reference to the accompanying drawings.

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